



A STUDY OF COMPARISON OF EFFECTIVENESS OF ERECTOR SPINAE PLANE BLOCK AND TRANSVERSES ABDOMINIS PLANE BLOCK IN INGUINAL HERNIA REPAIR FOR POST OPERATIVE ANALGESIA IN A TERTIARY CARE HOSPITAL IN KANCHIPURAM.

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ABSTRACT

Background: Inguinal hernia surgery is one of the commonly performed surgical procedures worldwide, which is associated with substantial postoperative pain and distress requiring effective analgesia. In this study, we aimed to determine and compare the effect of transverses abdominis plane block and erector spinae plane block on postoperative pain in patients undergoing inguinal hernia repairs under subarachnoid block.

Aims: Evaluation of effectiveness of ultrasound guided Erector spinae plane block and Transversus abdominis plane block in inguinal hernia repair done under subarachnoid block for postoperative analgesia.

Materials and Methods: 64 patients undergoing elective unilateral inguinal hernia repair under subarachnoid block were studied. Subjects were randomly assigned to either group E or T. After completion of surgical procedure, depending upon the allotted group, Erector spinae plane block and Transversus abdominis plane block were performed. SPSS 24 was used for statistical analysis.

Results: The mean duration of analgesia in Group E was longer (460.8 ± 47.5 min) than in Group T (282.00 ± 39.2 min) which is statistically significant $p < 0.001$. The mean postoperative 24 h tramadol requirement was less in Group E (128.0 ± 45.8 mg) than in Group T (185.2 ± 45.6 mg) with a p value < 0.001 .

Conclusion: This study concludes that ipsilateral ultrasound guided ESP block as a component of multimodal analgesia provides prolonged postoperative analgesia with reduced opioid analgesic requirement than TAP block in patients undergoing hernioplasty.

KEYWORDS : analgesia, ultrasound guided block, erectorspinae, transversus abdominis

INTRODUCTION:

Inguinal hernia surgery is one of the commonly performed surgical procedures worldwide, which is associated with substantial postoperative pain and distress requiring effective analgesia. Multimodal analgesia is used to control postoperative pain in inguinal hernia repair. Transversus abdominis plane (TAP) block is one of the approaches to provide effective postoperative analgesia in patients undergoing hernia surgeries. The erector spinae plane (ESP) block is a recently described regional anaesthesia technique, when applied to low thoracic region was reported to provide extensive, potent unilateral analgesia in these surgeries by acting on both dorsal and ventral branches of thoracic spinal nerves. In this study, we aimed to determine and compare the effect of transversus abdominis plane block and erector spinae plane block on postoperative pain in patients undergoing inguinal hernia repairs under subarachnoid block.

Need for the study:

1. It highlights the importance of selection of best suitable analgesia for post-operative pain.
2. Scarcity of studies on comparison of erector spinae and transverses abdominis plane block in post-operative pain in sub urban population.

AIMS & OBJECTIVES OF THE STUDY:

To Evaluate the effectiveness of ultrasound guided Erector spinae plane block and Transversus abdominis plane block in inguinal hernia repair done under subarachnoid block for postoperative analgesia in a tertiary care hospital in a sub urban population and the requirement of supplemental analgesia, quality of analgesia and complications following the block.

MATERIALS AND METHODS:

It is a prospective, randomised, double blinded study, after institutional review board approval and written informed consent, 64 patients undergoing elective unilateral inguinal hernia repair under subarachnoid block were studied for a period of 6 months. Subjects were randomly assigned to either group E or T using sealed envelope technique. After completion of surgical procedure, depending upon the allotted group, Erector spinae plane block and Transversus abdominis plane block were performed. Statistical analysis was done using SPSS24 in this study.

Parameters monitored are Demographic data – Age, weight, height, ASA-PS, Duration of surgery, Block success/failure, NRS score for first 24h (hourly upto 9h, 12h, 18h, 24h) both at rest and on coughing/movement and Duration of analgesia.

RESULTS:

Table I- shows the socio demographic data of the patients, ASA PS classification, height(cm), weight(kg) and surgical time of the patients, which are statistically insignificant.

Table II- shows the mean Numerical rating scale (NRS) score at rest measured at 1hr to 5th hr. NRS of group E (1.3 ± 0.7) and group T (1.9 ± 0.5) at 3hr is statistically significant (p value-0.001) at rest.

Table III- shows the mean Numerical rating scale (NRS) score on movement/coughing measured at 1hr to 5th hr. NRS of group E (2.1 ± 0.7) and group T (2.5 ± 0.5) at 3hr is statistically significant (p value-0.032) on movement/coughing.

Table IV - Mean duration of analgesia (min) in Group E is (460.8 ± 47.5) and Group T is (282.0 ± 39.2) which is

statistically significant (P<0.01).

Analgesic requirement for 24hrs (Tramadol) (mg) in Group E is (128.0 ± 45.8) and Group T is (185.2 ± 45.6) which is statistically significant (P<0.01).

Figure 1 & 2- Mean duration of analgesia(min) in Group E is (460.8 ± 47.5) and Group T is (282.0 ± 39.2) which is statistically significant (P<0.01).

Analgesic requirement for 24hrs (Tramadol) (mg) in Group E is (128.0 ± 45.8) and Group T is (185.2 ± 45.6) which is statistically significant (P<0.01).

DISCUSSION:

The principal finding of our study is that ultrasound guided ESP block significantly prolonged duration of analgesia and led to decreased postoperative analgesic requirement in first 24hrs when compared to TAP block in patients undergoing inguinal hernia repair. The mean duration of analgesia of TAP block in our study was 282min which is comparable to that reported by *Bhattacharjee et al* in his study done in patients undergoing total abdominal hysterectomy(290 min). Time to the requirement of first postoperative analgesic is significantly increased in patients received ESP block(460 min vs 282 min;p< 0.001). This was consistent with *M.A.Elyazed et al* who demonstrated in their study for open epigastric hernia repair with 20ml 0.25% Bupivacaine at T7 level provide analgesia for hr (p <0.001). In publications on ESP block for abdominal surgery, the block was performed at the level of T7 and showed extensive craniocaudal spread between the levels of C5-T2 and L2-L3 transverse process. Based on these data and because the surgery in our patients is performed at a level slightly lower than that desired in those publications, we decided to perform block at the level of T9. Moreover, ESP block represents a simple, easy to perform, possibly safer truncal block because the transverse process which represent ultrasonic target is easily visualised and the point of injection is far from neuroaxis, pleura and large vascular structures.

Limitations:

1. There was no control group in the study
2. The ideal concentration of LA for ESPB and TAP block was not addressed.
3. No data were collected to assess the sensorial coverage of ESP block and TAP block.

CONCLUSION:

Our study concludes that ipsilateral ultrasound guided Erector Spinae Plane block as a component of multimodal analgesia provides prolonged postoperative analgesia with reduced opioid analgesic requirement in patients undergoing hernioplasty.

Table – 1 Demographic Data

	Group E	Group T	P Value
Age	44.8	50.4	0.493
ASA I/II (n)	19/8	17/12	0.626
Height (cm)	160.65	158.8	0.607
Weight (kg)	57.45	58.55	0.829
Surgical time(min)	69.75	73.75	0.457

Table – 2 Evaluation Of Nrs Scores At Rest

Mean ± SD			
	Group E	Group T	P Value
1h	0.7 ± 0.6	0.9 ± 0.5	0.283
2h	1.0 ± 0.5	1.1 ± 0.6	0.364
3h	1.3 ± 0.7	1.9 ± 0.5	0.001
4h	1.9 ± 0.6	2.2 ± 0.5	0.097
5h	2.2 ± 0.6	2.4 ± 1.1	0.399

Table – 3 Evaluation Of Nrs Score On Movement/coughing

Mean ± SD			
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	Group E	Group T	P Value
1h	1.2 ± 0.5	1.3 ± 0.5	0.196
2h	1.6 ± 0.6	1.9 ± 0.5	0.060
3h	2.1 ± 0.7	2.5 ± 0.5	0.032
4h	2.5 ± 0.5	3.0 ± 0.9	0.063
5h	2.6 ± 0.5	2.9 ± 1.2	0.226

Table – 4

Mean ± SD			
	Group E	Group T	p Value
Duration of analgesia (min)	460.8 ± 47.5	282.0 ± 39.2	< 0.001
Analgesic requirement for 24hrs (Tramadol) (mg)	128.0 ± 45.8	185.2 ± 45.6	< 0.001

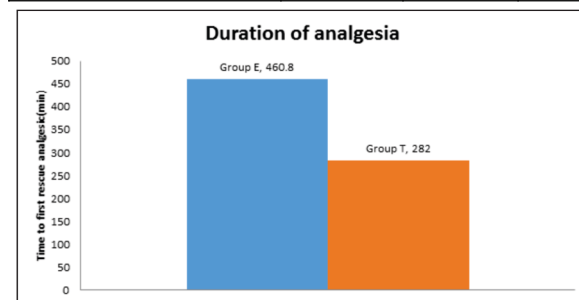


Figure 1

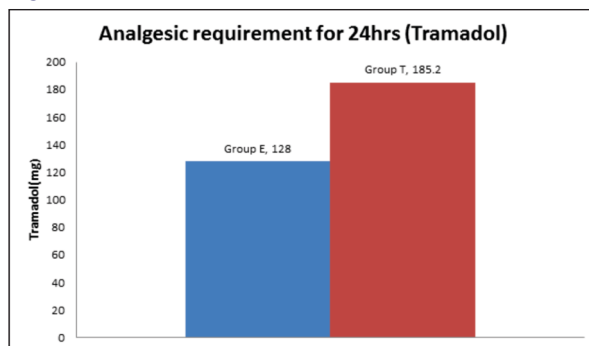


Figure 2

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Conflicts of interest: Nil

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